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file
IRT #3021
12-14-60

PROJECT INSPECTOR

Progress Report for October 1964

1. PROGRESS OF WORK

During this period we have found and demonstrated, theoretically and experimentally, that a change was necessary in the theory of implementation. So far the philosophy has been that the image could be scanned and all necessary operations performed on the resulting video signal. Compensation of the backlighting must depend on the average density level of the area surrounding the specific point being scanned at that instant. Simple bandwidth manipulations can average areas along each line of scan but cannot take into account the light levels of adjacent lines of scan. To obtain a proper area-average-density value after scanning would require commitment of the video information to a memory and sampling the information by means of some rather complicated digital means. Such an operation would be complicated and could not be performed in real time.

The alternative method, which we propose to use, is to work on the basis of two channels. The channel to control the backlighting will scan the film with a large, defocused beam. The information from this beam will depend on the average brightness of the whole area covered by the spot. This information will be processed, amplified, and used to control the intensity of the backlighting, within a sufficiently short time so that no lag shall be visible. The signal channel will simultaneously scan a small spot, in the center of the

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GROUP 1
Excluded from automatic downgrading and declassification

Declass Review by NIMA/DOD

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defocused spot, with a sharply focused beam whose intensity is controlled by the average brightness of the area surrounding it. The information from the signal channel will provide the enhanced image, after suitable processing.

The two-channel principle was proven experimentally in this period. Five possible methods to implement the dual, simultaneous scan have been suggested and are under investigation. The various methods will attempt to utilize the principles of: simultaneous viewing through different apertures, chromatic aberration, spectrum splitting, time sharing and vidicon viewing. We are in the process of calculating the practicability of these various methods.

2. PROBLEM AREAS ENCOUNTERED

The main problem is insufficient light. Suitable light sources are limited in their output and practical optical systems have poor light gathering capabilities.

3. PROJECTED WORK FOR THE NEXT PERIOD

On the completion of suitable calculations we shall test the more promising systems experimentally.

The use of "vidicon viewing" will be closely analyzed since it offers a possibility for effective light amplification.

The search for better "state-of-the-art" components will continue.

Arrangements will be made to inspect certain devices which may have possible application.

4. STATUS OF FUND EXPENDITURES TO END OF PERIOD

As of the end of October 1964, [redacted] had been expended, 25X1A

25X1A leaving a balance of [redacted] exclusive of fee.

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5. VERBAL COMMITMENTS AND/OR AGREEMENTS

None.

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